



Meat and Drink

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IN everyday life milk seems to have three pretty distinct uses—first, as a means of flavouring other beverages, as tea, coffee, and cocoa; secondly, as a culinary aid in the making of milk puddings, and as a soup stock; and third, as a dietetic speciality to maintain life.

I have no wish to find fault with the ordinary dairy milk in its first two uses, and, provided it is of average quality from a reputable dairy, nothing can be better for the purposes indicated; but as a dietetic aid pure and simple, the ordinary fluid milk has many faults and failings.

In the matter of infant feeding our superiors have always laid down the rule that maternal milk is best, ignoring the fact that such milk varies very widely indeed, and that so much depends on the mother. As far back as 1826 a German specialist published the analytical results of some twelve distinct samples, and gave us practically all that we know—even at the present day—of the vagaries of milk deposits in the human breast. Working from that data, a large variety of specimens have been examined, and the differences shown are most remarkable, ranging from over 9 per cent. of fat to less than one half of 1 per cent.; and from nearly 6 per cent. of nitrogenous matter to next to none at all! So after all is said in favour of breast feeding it remains far from a perfectly reliable food, and the reason is that so few women are able to live the regular and placid life necessary for infant rearing.

Cow's milk varies much less than human milk, although those who examine it regularly are firmly of opinion that its variation is quite wide enough. Still, the fact remains that it is far more stable than human milk, even at its best.

But infant feeding with ordinary cow's milk is impos-

bacteria and spores from which new bacteria grow. The former are easily destroyed at the first Pasteurisation ; but the spores when present are more obstinate. They grow into bacteria very quickly, and thus a successive series of heating will reach them, growth by growth, until they are exhausted and the milk is perfectly free from germs. So in the Horlick factory, at intervals of about an hour, it is warmed up until at last the milk is completely sterile, and when the laboratory are sure of this the milk is ready for further treatment.

By *boiling*, or, as it is called, "sterilising," the milk it is possible to kill all bacteria and spores at "one fell swoop," but this sterilising means changing the character of the milk, and the change is open to question. Pasteur's method, at the exact temperature, does not alter it in taste, appearance, or composition, and thus it is by far the superior way. It is, however, a much more tedious and expensive process than sterilising, but the cost has not to be thought of in Horlick's foods.

The next stage is accurately described as follows :—
"The practically equal parts of Wheat Flour and Barley Malt, in combination with water, are subjected, after careful preparation, for a specific time to a certain degree of heat, by the intervention of which the whole of the starch in the flour is converted into dextrine and grape-sugar, and the mixture becomes perfectly liquefied, with the exception of the husks of the grain. If a part of this liquid be taken and tested with iodine, it will be found that the latter has no *action*.

"The combination next undergoes a very careful and graduated process of pressing and straining, and the clear liquor which results is drawn through pipes into a vacuum pan. An equal quantity of the pure Pasteurised milk, obtained from inspected farms in the rich pasture lands which surround the factory, is next added through platinum pipes. The whole undergoes further treatment in the pan, during which the vegetable ferment of the malt continues working, acts upon the curds of the milk, and counteracts

the tendency to coagulate which characterises the ordinary product of the cow.

“The last stage in the process is that of evaporation, by which the Malted Milk is produced in the form of a powder.”

The result is a product which, in combination with water made up ready for the table, presents some remarkable characteristics.

It is always alkaline in its reaction, thus resembling natural milk at the time it leaves the teat! The addition of the cereals means a great increase of flesh-forming material, while the whole combination acts in such a way that the casein will *never* coagulate, but forms a light flocculent layer, easily got at by the weakest digestive glands. Even acid does not seem to have any power to coagulate the fluid! It is free from untreated starch, and every test available fails to show a grain which is not dextrinised. Yet it is not predigested, for it leaves Nature some work to do.

Now we can look at its analytical form :—

Moisture	2·54
Fat	8·87
Nitrogenous Matters	15·40
Carbohydrates :—	
Milk Sugar	5·04
Maltose	45·90
Dextrinised Starch	18·27
Glucose	0·18
Mineral Matters	3·80
	100·00

The *Lancet* tells us that “chemically the composition of malted milk resembles that of human milk (for which it is offered as a substitute), supposing all but 4 per cent. of water had been removed,” but I do not agree that this is a good comparison, for no two samples of human milk are ever alike, while the Malted Milk of Horlick’s make is practically always the same.

The most notable figure is perhaps the small ratio of fat compared to nitrogenous matters and the carbohydrates. It is pretty well known now that the latter can be utilised as a substitute for fat in the production of heat and energy, two and a quarter parts of the carbohydrates being equal to one part of fat. As a matter of practice thousands of infants have been completely reared on Horlick's, and found enough fat in the product to grow up into good sound citizens. It must be freely admitted that Horlick's Malted Milk contains a much larger percentage of fat than either of the most popular infants' foods in powder form, and many of the latter have their starch unchanged, which makes them useless as a food. The great authority on foods—Dr. Hutchison—brings out these defects very strongly, and gives careful analytical details of all the leading brands.

As to the importance and value of flesh formers, the famous milk specialist—Mr. H. Droop Richmond—in his standard work, "Dairy Chemistry," states:—"Neither fat nor sugar can replace proteids. Fat and sugar being composed of the same elements can replace each other best . . . yet fat is far more valuable than sugar." This point confirms my view. Horlick's give a very high proportion of useful nitrogenous matter, in an easily digested form, and the starchy matter is all advanced a stage in the digestive process, so as to make it precisely similar to natural milk!

Now we must consider it from an adult's point of view. When growth is complete—the flesh and bones being developed and the only need being for renewal—here Malted Milk plays a most important part, for the natural fat can be replaced with carbohydrates with great advantage. It can be taken cold or hot, plain or flavoured with many essences, or cocoa and coffee, and it makes a suitable beverage in all cases of illness. Demulcent, beautiful in texture and fine in flavour, it should be well beaten with an egg whisk, and it will yield a cream-like beverage, gratifying to the stomach and palate.

As an "all-round" drink nothing could be better, for it is food as well as drink. Athletes find it a good stand-by, and if footballers could only be induced to take it at "half-time," their stamina would be greatly increased. So portable and easily prepared, with the certainty that it will keep good always, one feels that it would make a capital pick-me-up for teachers at "playtime," and business folk at that wonderful hour "eleven o'clock," when breakfast is wearing off and lunch still seems a long time ahead.

As to cost. It must be remembered that it is not a cheap food. It is not easy to manufacture, and the care taken at the factory shows an immense first cost in the production. Next we must think of the number of professional men employed—veterinary surgeons for the examination of the cattle, laboratory workers, and the farm surveyors and inspectors. No cost being spared in its production, and no care being too great, we cannot think it dear at its retail price. People willingly pay 5½d. for a tin of condensed milk which, if diluted to resemble ordinary milk, means 5½d. for one and-a-half pints; and compared to this Horlick's comes out well.

In conclusion, then, I have formed a very high opinion of the product. Hundreds of medical men know and value it, and their testimony is filed away in thousands of letters! It is neither a quack remedy nor a patent food; its formula is open to anyone, and probably anyone could make it; but the care and the experience, coupled with the opportunity, are the essential details, and these are only obtained in Horlick's method, Horlick's system, and Horlick's brand!

W. J. M.



HORLICK'S MALTED MILK.

Analysis :

Fats	...	...	...	...	...	...	8.78
Proteids	...	...	...	...	...	...	16.35
Dextrine	...	...	...	...	...	...	18.80
Lactose and Maltose	...	...	...	...	...	...	49.15
(Total Soluble Carbohydrates 67.95)							
Inorganic Salts	...	...	...	...	...	...	3.86
Moisture	...	...	...	...	...	...	3.06

HOLT on "Infancy and Childhood."—Page 163, Edition 1902.

Horlick's Malted Milk is composed of the nutritive extracts from selected malted barley and wheat combined with pure, rich cow's milk pasteurised. It contains no cane-sugar, and the starch of the wheat has been entirely converted into dextrine and maltose. It is free from pathogenic germs, and the casein of the milk is partially predigested in the process of manufacture, thereby preventing the formation of large curds, only delicate flocculent particles appearing. It is put up in sealed glass bottles, and keeps indefinitely in all climates.

HORLICK'S FOOD COMPANY,
34, FARRINGDON ROAD, LONDON, E.C. AND SLOUGH, BUCKS.
In Bottles 1/6, 2/6, and 11/-